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(54) Title: A NOVEL POTASSIUM CHANNEL MODULATOR PEPTIDE

(57) Abstract: A novel 13-residue peptide Mo1659 has been isolated from the venom of a vermicorous cone snail, *Conus monile*. HPLC fractions of the venom extract yielded an intense UV absorbing fraction with a mass of 1659 Da. *De novo* sequencing using both matrix assisted laser desorption and ionization and electrospray MS/MS methods together with analysis of proteolytic fragments successfully yielded the amino acid sequence, FHGGSWYRFPWGY-NH₂. This was further confirmed by comparison with the chemically synthesized peptide and by conventional Edman sequencing. Mo1659 has an unusual sequence with a preponderance of aromatic residues and the absence of apolar, aliphatic residues like Ala, Val, Leu, Ile. Mo1659 has no disulfide bridges distinguishing it from the conotoxins and bears no sequence similarity with any of the acyclic peptides isolated thus far from the venom of cone snails. Electrophysiological studies on the effect of Mo 1659 on measured currents in dorsal root ganglion neurons suggest that the peptide targets non-inactivating voltage dependent potassium channels.